Ultra Prime T2.8/8R

Main Features:

- Rectilinear design keeps straight lines straight
- Covers full aperture (ANSI Super 35) with even illumination
- Ultra Prime optical quality
- Maximum resolution & contrast with almost no geometric distortion
- Zeiss T* XP lens coating for minimal veiling glare
- Color matched to Ultra Primes, Master Primes, Ultra 16 & Lightweight Zoom LWZ-1
- Aspherical lens keeps size & weight down
- Ultra Prime ergonomics

With the new ARRI/Zeiss Ultra Prime T2.8/8R, ARRI introduces a unique extreme wide-angle lens that further extends the focal range of the Ultra Primes to a total of 16 lenses from 8 mm to 180 mm. The Ultra Prime 8R is an unusual specialty lens of stunning optical quality with a revolutionarily small form factor.

The Ultra Prime 8R is perfect for commercials, features and music videos because of its rectilinear design (the 'R' in its name stands for 'rectilinear'). In contrast to a fisheye lens, a rectilinear lens keeps straight lines straight and creates an image that covers the entire ANSI Super 35 aperture. Both the Ultra Prime 10 mm and 12 mm are also rectilinear wide-angle lenses. The Ultra Prime 8R is ideal for wide establishing shots inside buildings or cities, sweeping vistas, the interior of cars, exhilarating high-speed POV shots, small rooms, unusual angles and many, many more applications where a new and fresh look is required. Because of its enormous depth of field and straight image geometry, it is also extremely useful for shooting miniatures.

With the Ultra Prime 8R, Zeiss used the latest technological advances to keep the high optical and ergonomic standard of the Ultra Primes in an 8 mm design. This was no easy feat since the wider a lens gets, the more difficult it is to keep image quality at an optimum. This explains why many lens manufacturers shy away from building extreme wide-angle lenses – and building such a lens in a rectilinear design is even more difficult.

The front element of the Ultra Prime 8R is a radically shaped aspherical lens element that is produced using semiconductor technology, resulting in high optical quality while substantially reducing size and weight. In fact, the Ultra Prime 8R is smaller than the 10 or 12mm Ultra Primes – a revolutionary size for an 8mm lens – and weighs only 2/3rds of the 10mm's weight. A small extreme wide-angle lens not only speeds up work on the set, it can also be employed in unusual places. It gives the cinematographer ample room to place lights when working close to the actors and allows the lens to skim past objects that are very close to the optical axis for shots that were not possible before. As an extra benefit, the Ultra Prime 8R can be used on the ARRIFFLEX 16 SR3 (when the viewfinder is rotated up for clearance, of course).

Special optical glass with anomalous partial dispersion, a floating element, exotic glass materials and internal focusing do their part to ensure that the Ultra Prime 8R shares the family traits of its siblings. Like the other Ultra Primes, the Ultra Prime 8R

- covers the whole ANSI Super 35 image area (24.9mm x 18.7mm / 0.980" x 0.7362"),
- is super color matched to guarantee seamless cuts between scenes and to avoid time consuming color matching in post,
- has minimized chromatic aberration and almost no geometric distortion,
- shows maximum contrast and resolution consistently over the entire focus range including unrivaled close focus performance,
- has an even illumination of the whole Super 35 field,
- shares special light absorption techniques and the new Carl Zeiss T* XP multi-layer anti-reflex coating for greatly reduced veiling glare,

- has the focus and iris rings in the same position as the other Ultra Primes for fast and easy lens changes and
- shares the same robust and reliable construction that is appreciated by rental houses since it minimizes downtime.

Because the Ultra Prime 8R has an extremely wide angle of view, it does not work with most regular matte boxes, necessitating a new front shade for the ARRI Lightweight Matte Box LMB-4. With this new shade, the LMB-4 becomes the LMB-4A. When mounted on the Ultra Prime 8R, the LMB-4A can accept two 6.6 x 6.6 filters. A new set of masks allows the LMB-4A to still provide ample flare protection for the longer Ultra Primes.

The Ultra Prime T2.8/8R extends the range of Ultra Prime lenses at the extreme wide end. Together with the 10, 12, 14 and 16 mm Ultra Primes, these lenses provide the most complete wide-angle selection in any modern prime lens set. Thus the Ultra Primes now offer 16 different focal lengths for every cinematic need, from the only telephoto lens designed specifically for motion pictures, the Ultra Prime 180 mm, to the new Ultra Prime 8R, giving you the flexibility to get the coverage you want.

What is 'Rectilinear'? What is a 'Fisheye'?

When a lens projects a three dimensional scene onto a two dimensional piece of film, not all geometric properties of the original scene can be maintained. This is essentially the same problem as mapping the shape of the continents of our three dimensional globe onto a two dimensional map. The choices of lens design, focal length and distance to the subject determine the character of this mapping, which is commonly referred to as perspective, one of the cinematographer's most important tools. For wide angle lenses, the lens designer must make a choice between a rectilinear or a fisheye lens design, with different consequences for perspective. The most obvious differences can be seen by how straight lines and objects at the edge of the frame will appear.

Since the human eye judges distance by the way elements within a scene diminish in size and the angle at which lines converge, most lenses are designed to duplicate those „natural" geometric relationships on film. This is called a rectilinear perspective, and to achieve it the lens will stretch the image so that vertical, horizontal and diagonal lines that we perceive as being straight are reproduced as straight lines on film.

There is, however, a limit as to how wide a lens with a rectilinear perspective can be, based on the limited amount of space available in front of the camera, and on various optical problems that get increasingly unwieldy as the angle of view increases. The 122° diagonal angle of view of the Ultra Prime 8R is already at the limit, making it a unique and unusual lens for the cine as well as the still photography field.

For this reason many extreme wide angle lenses are designed as fisheye lenses. A fisheye lens can have a wider angle of view than a rectilinear lens. But it maps the scene to film differently than we perceive the world around us, because the focal length is actually changing within the image. The farther a straight line is from the center of the frame, the more it will be rendered as curved, and objects at the edges of the frame will be heavily distorted with the typical fisheye look.

A rectilinear wide angle lens on the other hand renders all straight lines in the subject as straight lines in the image, though there is linear stretching applied to the image that increases as an object gets closer to the frame edge. This effect tends to exaggerate perspective, i.e. it will make rooms appear larger than they are, enhancing the illusion of depth. However, a circular object, like a ball or a person's head, located near the edge of the frame will appear to be somewhat enlarged and will have an oval shape.

Neither fisheye nor rectilinear extreme wide angle lenses represent reality in quite the same way as we see it, but they provide two different ways to manipulate perspective, to change the illusion of space and distance.

To the right are some sample images taken with a rectilinear and a fisheye still photography lens to illustrate the two different looks.

Ernst Abbe, Carl Zeiss and Otto Schott pose for this image taken with a fisheye lens. Note how the vertical lines behind them are curved, but how the general shape of their distinguished heads is preserved.

The same three guys photographed with a rectilinear lens. The vertical lines behind them now look straight, but the shapes of Ernst and Otto's heads are stretched.

The Zeiss Optical Museum in Oberkochen, taken with a fisheye lens. Again we can see how straight lines bend. Note especially the way the center column looks.

The optical museum photographed with a rectilinear lens, keeping straight lines straight.

Specifications for ARRI/Zeiss Ultra Prime T2.8/8R

Lens type:	Distagon T* XP
Aperture:	T2.8 to T22
Close focus:	0.35 m/1 1/4'
Length (lens mount to front):	130 mm/5.1"
Outside front diameter:	134 mm/5.3"
Weight:	2 kg/4.4 lbs
Horizontal angle of view:	114° for ANSI Super 35 Silent camera aperture
	(24.9mm x 18.7mm/0.980" x 0.7362")
	112° for DIN Super 35 camera aperture
	(24mm x 18mm/0.944" x 0.7087")
	107° for Normal 35 Academy camera aperture
	(22mm x 16mm/0.8661" x 0.6299")

ARRI/Zeiss Ultra Prime T2.8/8R with feet scale	K2.47612.0
ARRI/Zeiss Ultra Prime T2.8/8R with meter scale	K2.47613.0
Lightweight Matte Box LMB-4A	K2.47633.0
Wide angle replacement shade for LMB-4	K5.65585.0
LMB-4A step down ring to 134 mm for Ultra Prime 8R	K2.47635.0
Mask set for LMB-4A for 12 and 14 mm prime lenses	K2.47634.0

Pos. No.	Ident No.	Description
1	K2.47633.0	Lightweight Matte Box LMB-4A
2	K2.47635.0	LMB-4A 134mm Stepdown Ring for UP8R
3	K5.65585.0	Wide-Angle replacement shade for LMB-4
4	K2.47634.0	LMB-4A Mask set for 12mm and 14mm prime lenses

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